Case Study

weisstechnik and 10 temperature test chambers
for lithium-ion batteries

WHY	HOW	WHAT
Various temperature tests of lithium-ion batteries for electric vehicles in the world's largest test centre for high-voltage batteries	Turnkey solution According to LV 124 Including safety devices	10 temperature test chambers Central cooling supply

WHY – The challenge.

FEV Group GmbH has built the world's largest development and test centre for high-voltage batteries for electric vehicles in Saxony-Anhalt. A wide variety of tests are carried out on 15,500 square metres and in around 70 facilities.

This includes a wide range of temperature tests in accordance with the automotive test standard LV 124. Ten test chambers were to be delivered and successively put into operation within the project period of only 18 months. Refrigeration is supplied via the central refrigeration plant, and a rental refrigeration plant is to be provided on a transitional basis.

The turnkey temperature test chambers are to be equipped with safety features in accordance with the determined hazard level.

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HOW – The idea.

In order to work quickly and economically, compact, modular temperature test chambers are developed on the basis of proven weisstechnik components. These can be used universally and operate with a cooling rate of 2 K/min and a heating rate of 3 K/min.

When connecting the test chambers to the on-site central cooling system, a simultaneity factor of 30% was taken into account. Since the chambers were to be used during the construction phase of the test centre, delivery and installation will take place successively.

Until the central refrigeration system is completed, a rental refrigeration system will be provided and installed for the operation of the chambers.


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info@weiss-technik.com **www.weiss-technik.com**

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WHAT – The solution.

The temperature test chambers have a 22 m³ test chamber made of stainless steel. They allow temperature tests from -40 °C to +90 °C with a test duration from a few minutes to several months.

Cooling is provided externally via the test centre's central refrigeration system. The chambers are individually controllable. Control is via the integrated control system S!MPAC, operation and monitoring via a web panel with touch screen, status and warning display via LED and the operating software WebSeason.

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Selected Product: WT 22'/40-90/5/Li-HL 4


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According to the risk assessment for tests with lithium-ion batteries, safety devices according to Hazard Level 4 were integrated.

Design features:

- Large test room
- Safety devices according to Hazard Level 4:
  - Electric door locking with emergency release
  - Emergency stop button in the test room and on the outside
  - Status display with signal lamp and horn
  - Reversible pressure relief flap to compensate pressure fluctuations in the test chamber
  - Tension- and pressure-resistant feed-throughs (200 mm and 50mm diameter) with sealing plugs and plug safety device on the outside
- Purging air system for purging the test chamber with ambient air in the event of a malfunction
- Device for forced cooling of the test chamber in the event of certain failures to a set safety temperature of +20 °C
- Fault signal on potential-free switching contact
- 2-leaf test room door with viewing windows

info@weiss-technik.com www.weiss-technik.com